Hepatitis B

Definition

Hepatitis B is liver inflammation caused by the hepatitis B virus (HBV). The HBV is infectious and is spread through blood, sexual transmission, via contact with open skin sores or from mother to baby. If not monitored or managed appropriately, HBV can cause cirrhosis, liver failure, liver cancer and death.

Acute hepatitis B

HBV is termed 'acute' when people are first infected. Only 10% of infants will clear the HBV, thus they are at the highest risk of chronic disease and cirrhosis later in life. Their follow up must be prioritised. Most (95%) adults will clear the virus with complete recovery within six months. They will then usually be immune to the hepatitis B virus for life.

Chronic hepatitis B (CHB)

HBV is termed 'chronic' if a person's immune system fails to clear the virus within 6 months. I.e the detection of HBsAg +ve (or HBV DNA) on 2 occasions at least 6 months apart. They will usually have hepatitis B for life. There is no such thing as a 'healthy carrier' of CHB and ALL people with CHB require lifelong monitoring and management (see management of Chronic Hepatitis B section).

Background

Rates of HBV in the Kimberley region are FOUR times the national average, with the rate climbing to up to EIGHT times the national average for Aboriginal and Torres Strait Islander people living in remote areas.

HBV is commonly asymptomatic. Less than 10% of children and 30-50% of adults will have symptoms, but may develop one or more of the following: abdominal pain, nausea or vomiting, tiredness, body aches, loss of appetite for a few days then jaundice, pale stools and dark urine.

Screening for Hepatitis B

Screening for infection / immunity:

Request all three serological tests (HBsAg, HBsAb, HBcAb) in the following patient groups:

- ONCE for ALL Aboriginal and Torres Strait Islander people in the Kimberley who do not have evidence of completed vaccination AND no previous blood test to determine immunity (see Box 1).
- People who are about to undergo chemotherapy or immunosuppressive therapy should be screened for HBV before beginning therapy.
- ALL pregnant women at the first antenatal visit of each pregnancy with HbsAg (see hepatitis B in pregnancy section).

Screening for risk factors:

ANNUALLY review ALL people for additional *High Risk** factors (table 2) at their health check. If present and they are not known to be immune (no HBsAb > 10 mIU/ml), screen for infection/immunity with HBsAg, HBsAb, HBcAb.

Interpreting Hepatitis B Serology Results

If there is any confusion in interpreting hepatitis B serology please discuss with physicians as occult hepatitis B and reactivation of past resolved hepatitis B is possible.

Table 1: Interpreting Hepatitis B serology

Results	Interpretation	Action required
HBsAg negative HBsAb negative HBcAb negative	Does not have hepatitis B. Should be considered non-immune.	Check Immunisation record and previous HBsAb results. Document findings in pts file. Consider vaccination if eligible due to High Risk* factors (table 2) or via the National Immunisation Program.
HBsAg negative HBsAb positive (≥10 IU/ml)	Immune due to resolved infection if HBcAb +ve. Immune due to vaccination if HBcAb –ve.	Document the patient is immune and that no further screening is required clearly in their medical history.
HBsAg negative HBsAb negative HBcAb positive	Multiple possibilities: recovering from acute infection, false positive, low level chronic infection, low level immunity	Check immunisation record and previous HBsAb results. Seek physician or public health advice.
HBsAg positive	Current hepatitis B infection. Acute if HBcAb IgM +ve. Chronic if HBsAg +ve for > 6 months.	See management section

Vaccination for Hepatitis B in the Kimberley

Is FREE for all children in WA through the National Immunisation Program. Catch-up programs are also available free of charge for those under 20yoa.

Is FREE for ALL Aboriginal and Torres Strait Islander adults aged ≥20 years of age who are not known to be immune and *recommended* for other people considered *High Risk** (table 2)who are not known to be immune. Vaccination is currently only FREE in WA however for some High Risk* people (table 2).

Testing for immunity to Hepatitis B after Vaccination.

A completed vaccination course generally provides long-lasting protection even though HBsAb levels may decline over time and become undetectable.

Testing for immunity after vaccination is only recommended for some *High Risk** people (table 2) and should be done by testing for HBsAb 4-8 weeks after completion of vaccination course.

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Kimberley Aboriginal Health Planning Forum

Hepatitis B

Booster doses after vaccination for High Risk* People.

Booster doses are not routinely recommended for immunocompetent children and adults after a primary course of hepatitis B vaccination (see Box 1).

If adequate HBsAb levels are not reached in a High Risk* (table 2) person after the 3rd dose of vaccination, exclude current infection by testing for HBsAg. If negative, check vaccine eligibility (table 2) and provide a 4th dose of vaccine. If adequate HBsAb levels are still not reached following this booster dose, provide 2 more doses of vaccine 1 month apart and re-test for HBsAb levels at least 4 weeks after the last dose. Subsequent options for non-responders should be discussed with public health.

Persistent non-responders should be informed they are not protected against hepatitis B, should minimize exposures and that they will require HBIG within 72 hours of exposure to hepatitis B.

Table 2: High Risk* factors for hepatitis B infection, funded vaccine eligibility and recommendations for post-vaccination testing

High Risk* **factors**	**Eligible for free vaccine#**	**Confirm immunity after vaccination**
Aboriginal and Torres Strait Islander adults who have not been immunised	Y	N
Sexual partners or household contacts of people with CHB	Y	Y
People who are immunosuppressed	N	Y
People with HIV or Hepatitis C infection	Y	Y
People with chronic liver disease	Y	Y
People on haemodialysis	N	Y
Men who have sex with men	Y	N
Sex industry workers	Y	N
People who inject drugs	Y	N
People born overseas in intermediate to high prevalence countries (see CDC Map – ASHM)	N	N
People travelling to endemic regions for extended periods or regular, short trips	N	N
Inmates of correctional facilities	C	N
People at significant occupational risk (e.g. health care workers who have frequent exposure to human tissue or body fluids.)	N	Y
Infants of mothers with Hepatitis B	Y	Y

Y- Covered by the WA health department, C-Correctional program

Box 1- WA Hepatitis B vaccination program for non-immune Aboriginal adults

Testing for vaccine-induced immunity among immunocompetent Aboriginal and Torres Strait Islander people without High Risk factors who have evidence of completed hepatitis B vaccination is not routinely recommended. However, previously vaccinated Aboriginal and Torres Strait Islander adults aged ≥20 years who are tested for other reasons and found to have HBsAb <10 IU/ml are now eligible for free hepatitis B vaccination in WA. Check HBsAb level at 4-8 weeks following a single booster dose. Those who demonstrate an antibody response ≥10IU/ml do not require subsequent doses. If HBsAb levels remain <10 IU/ml following the single booster dose give two subsequent doses to complete the 3 dose course and re-test at 4-8 weeks. Refer to WA Health FAQs for further information.

Initial assessment of Patients with Hepatitis B.

All patients with confirmed acute or chronic hepatitis B (HBsAg +ve) require:

A thorough clinical history and examination including:

- An alcohol, smoking and other drug use history
- Symptoms of liver disease (see background section)
- Signs of liver disease such as palmar erythema, spider naevi, dupytren's contracture, caput medusae, splenomegaly, ascites or peripheral oedema

Initial Investigations:

- HBsAg, HBeAg, HBeAb, HBV DNA
- LFTs, FBC, UEC, coagulation studies, alpha-fetoprotein (AFP) and AST
- Hepatitis A, C, D and HIV serology
- Abdominal ultrasound
- If ALT > 30 in males and >19 in females and there is no record of the following test results on the patient's file, order a ONCE off parenchymal liver disease screen, which is:

Ferritin, iron studies, antinuclear antibody, smooth muscle antibody, anti-mitochondrial antibodies, copper, alpha-1 antitrypsin level, caeruloplasmin

Management of Acute Hepatitis B

All suspected cases of acute hepatitis B should be discussed with the regional physician and a specific treatment plan made. Follow up is crucial. Repeat HBsAg in 6 months to see if infection has resolved or progressed to chronic infection.

Management of Chronic Hepatitis B

Provide education and support

See Hepatitis WA for good patient information

Discuss with patient:

- That CHB is usually a lifelong condition but if monitored and managed appropriately we can prevent further liver damage, liver cancer and death.
- That most people with CHB do not need treatment as their own body manages the virus itself, but they do need regular monitoring to make sure it continues to do so.

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- The infectious nature of HBV and how to prevent spread. See Hepatitis WA.
- The importance of holistic liver health by encouraging alcohol and smoking cessation, achieving a healthy body weight and controlling diabetes / other chronic diseases.
- They may need to avoid/limit medications which may worsen liver function i.e. paracetamol.

Vaccinations

Ensure influenza and pneumococcal vaccines are up to date. Vaccinate against hepatitis A if non-immune (free).

Household and sexual contacts

Identify, screen and vaccinate non-immune contacts (for free, see table 2). Include current sexual contacts and those with sexual contact in the last 6 months.

Advise of the infectious nature of HBV and how to prevent HBV spread. See Hepatitis WA.

Determine the phase of CHB

CHB Is divided into 4 phases; immune tolerance, immune clearance, immune control and immune escape. Use table 3 to determine which phase a person is in and document in the medical record. Review phase with each routine review as this determines their monitoring and management options

Arrange regular monitoring and screening

ALL require regular monitoring and follow up. No one should be considered a "healthy carrier".

ALL require 6-12 monthly monitoring for signs and symptoms of hepatitis B (see initial assessment section) and blood tests as per table 3 or physician advice.

ALL patients should be screened yearly for fibrosis/cirrhosis. This may be performed by calculating an APRI score using FBP and AST, or a Hepascore (not Medicare rebateable). An APRI score >1.5 has a positive predictive value of 90% for cirrhosis.

People at higher risk of HCC (table 3) require screening for HCC with 6 monthly liver USS and AFP.

Who to Treat

Medical treatment aims to prevent or delay progression to cirrhosis and hepatocellular carcinoma (not to cure infection). Not all patients with CHB require treatment. This decision is guided by:

- The phase of illness
- Degree of liver damage and presence of cirrhosis
- Patient comorbidities and co-infection
- Lifestyle factors (alcohol use and ability to take regular medication)
- Patient preferences

If a patient is in a phase of CHB where treatment should be considered (table 2) or they have confirmed liver fibrosis/cirrhosis, the GP should:

- Discuss with the patient what medical treatment means, including the need for daily medication (may be lifelong), regular investigations and review, and the need to ideally abstain from alcohol during treatment.
- Refer the patient to physicians (or a registered GP hepatitis B prescriber if appropriate) for consideration of treatment if the patient wishes to be considered for medical treatment.

Hepatitis B in Pregnancy

All pregnant women should be screened for hepatitis B at the first antenatal visit of each pregnancy with HBsAg.

If HBsAg +ve in pregnancy order HBeAg, HBeAb, HBV DNA, LFT and refer to the obstetric team at birthing hospital by 20 weeks gestation for discussion around:

- Hepatitis B counselling and education
- Ongoing monitoring and management required during pregnancy
- Physician referral as soon as possible in pregnancy to enable input and possible medical treatment in the third trimester
- Planning around management and follow up for their newborn

Management of Infants Born to Mothers with Hepatitis B

Management in hospital

Provide hepatitis B vaccine AND hepatitis B immunoglobulin (HBIG) at the same time within 12 hours of birth. See Australian Immunisation Handbook.

Inpatient management according to WACHS protocols.

Midwife to refer infant prior to hospital discharge to local child health nurse/GP/AMS to ensure follow up, education and support

Provided infant has received hepatitis B vaccination and immunoglobulin at birth, breastfeeding should be encouraged and supported.

Management post discharge from hospital

- If birth Weight >2000g and gestation ≥32 weeks: Hepatitis B vaccination as per routine schedule at 2, 4 and 6 months.

If birth Weight <2000g or gestation <32 weeks:

- Hepatitis B vaccination at 2, 4, 6 AND 12 months

Order HBsAg and HBsAb 3-12 months after completion of hepatitis B vaccination course (minimum age 9 months).

If HBsAg +ve or HBsAb -ve:

- Refer to pediatrician for further management.

When to Refer/Discuss

The Kimberley Regional Physician Team can review patients with Hepatitis B as part of the regular visiting clinics to each town in the region, and in Hepatology/Immunology clinic at Broome Hospital. The team work with a Hepatology Clinical Nurse Specialist who works two days a week at Broome Hospital to help co-ordinate treatment for people with viral hepatitis in the region.

They can be contacted by phone (on call physician via Broome Hospital switchboard 08 9194 2222) or (if immediate advice is not needed) via e-mail (KRPT@health.wa.gov.au) or via MMEx message to 'Kimberley Regional Physician Team'.

Routine referral

To visiting physician service or GP hepatitis B prescriber (via your local clinic referral process):

- Anyone with acute or chronic Hepatitis B

Urgent referral

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Discuss with physicians by phone or (if immediate advice is not needed) via email/MMEx using above details:

- Concerned re possible acute hepatitis B
- Unsure regarding required monitoring, screening, follow up or suitability for treatment
- A patient with CHB or past resolved hepatitis B is about to undergo immunosuppressive therapy
- Pregnant patients with HBV.

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Table 3. Hepatitis B monitoring and screening recommendations

Phase	1. Immune tolerance	2. Immune clearance	3. Immune control	4. Immune escape
Description of phase	Viral replication, minimal liver damage	Immune response, inflammation and liver injury	Suppression of viral replication, minimal liver damage	Viral replication, high risk of cirrhosis
Natural History	Low risk of progression to advanced liver disease	Associated with hepatic flares and risk of progressive liver disease	Low risk of advanced liver disease. 10-20% have reactivation of HBV replication after many years	Can enter this phase from immune clearance or immune control phase. High risk of progression to advanced liver disease
HBsAg	>6 months positive	>6 months positive	>6 months positive	>6 months positive
HBeAg	Positive	Positive	Negative	Negative
HBeAb	Negative	Negative or positive	Positive	Positive
ALT	Normal#	Persistently or intermittently elevated	Normal#	Persistently or intermittently elevated
HBV DNA	≥20,000 IU/ml	≥20,000 IU/ml, fluctuating	<2000 IU/ml	≥2000 IU/ml
Recommended monitoring and screening. When to consider treatment	· No treatment is required · Monitor LFT, HBsAg, HBeAg, HBeAb and HBV DNA every 12 months · Screen yearly for fibrosis/cirrhosis^ · If high risk for HCC*, perform AFP and liver USS every 6 months to screen for HCC · If ALT levels increase to > 2x ULN◊#: Order LFT, HBsAg, HBeAg, HBeAb, HBV DNA in 3 months If ALT levels > **2x ULN◊# for > 3 months AND/OR if HBeAg remains +ve for > 6 months (no seroconversion to HBeAb) OR if age >40 years with ALT >1-2 x ULN◊#:** It is likely the phase has changed and consideration of treatment is required. Discuss with/refer to physicians if unsure	· Consideration of treatment is required. Discuss this with the patient and offer referral to physicians or registered GP Hepatitis B prescriber for further advice · If no treatment is commenced, monitor LFT, HBsAg, HBeAg, HBeAb and HBV DNA every 6-12 months or as per physician recommendations · Screen yearly for fibrosis/cirrhosis^ · If high risk for HCC*, perform AFP and liver USS every 6 months to screen for HCC	· No treatment is required· Monitor LFT, HBsAg and HBV DNA every 12 months · Screen yearly for fibrosis/cirrhosis^ · If high risk for HCC*, perform AFP and liver USS every 6 months to screen for HCC · If ALT levels increase above normal#, and HBV DNA remains <2000 IU/ml, exclude other possible causes of ALT elevation (fatty liver, alcohol use, medications, other hepatitis' etc). If no other cause for ALT elevation is found, it is likely the phase has changed and consideration of treatment is required. Discuss with/refer to physicians if unsure	· Consideration of treatment is required. Discuss this with the patient and offer referral to physicians or registered GP Hepatitis B prescriber for further advice · If no treatment is commenced, monitor LFT, HBsAg and HBV DNA every 6-12 months or as per physician recommendations · Screen yearly for fibrosis/cirrhosis^ · If high risk for HCC*, perform AFP and liver USS every 6 months to screen for HCC

^Screening for fibrosis/cirrhosis: All patients with CHB should be screened yearly for fibrosis/cirrhosis with an APRI score, hepascore (not medicare rebateable), elastography or fibroscan (if/when available). An APRI score of >1.5 would warrant referral to physicians

*CHB patients at high risk for HCC: 1) Aboriginal and Torres Strait Islander people aged over 50 2) All patients with cirrhosis 3) Patients with a family history of HCC 4) Asian males aged 40+ 5) Asian females aged 50+ 6) Africans aged 20+

◊ ULN = Upper Limit of Normal

Normal ALT = 30 U/L for males and 19U/L for females

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